

1 **Amendments to the Claims:**

2 This listing of claims will replace all prior versions, and listings, of claims in the  
3 application.

4

5 **Listing of Claims:**

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7 Claim 1 (previously presented): An apparatus for providing a variable flow of  
8 liquid, comprising:

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10       a. an AC permanent magnet synchronous motor pump controller  
11 comprising a programmable micro-controller with means generating AC pulse  
12 switching signals applied to said motor pump for varying the flow rate of said  
13 motor pump over an extended range of flow rates in accordance with said AC  
14 pulse switching signals, further comprising means setting the frequency of said  
15 AC pulse switching signals for obtaining a given speed of said motor pump,  
16 wherein said speed is synchronous to said frequency for all realizable speeds of  
17 said motor pump, and further comprising means setting the pulse width of said  
18 AC pulse switching signals in relation to said frequency for a given motor speed  
19 in order to maintain constant and continuous flow for any given realizable speed  
20 of said motor pump; and

21

22       b. an output switching circuit incorporated into said controller, for  
23 generating said AC pulse switching signals and for driving said motor pump in  
24 direct synchronization with the frequency of said AC pulse switching signals.

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26

27 **Claim 2 (cancelled)**

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1

2 Claim 3. (previously presented): The apparatus of Claim 1, further comprising an  
3 AC permanent-magnet synchronous motor pump with means defining a rotor and  
4 impeller integrally coupled to said motor pump, wherein said rotor and said  
5 impeller are immersed in a common liquid medium, wherein said rotor and said  
6 impeller are concentric and wherein said rotor and said impeller are rigidly and  
7 fixedly coupled to prevent relative rotation, for insuring that said motor pump will  
8 reliably start rotation when energized with said controller and for preventing  
9 impeller chatter when said motor pump is driven with said controller over a range  
10 of realizable rotation rates.

11

12 Claim 4 (previously presented): The apparatus of Claim 1, further comprising a  
13 mode switch for choosing the mode of operation of said micro-controller, wherein  
14 the mode of operation is selected from a group comprised of a programmed flow  
15 control variation mode, an audio input mode, a manual mode and an external  
16 data input/output mode.

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18 Claims 5-6 (cancelled)

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20 Claim 7 (previously presented): The apparatus of Claim 1 further comprising:

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22 a. audio circuitry with means varying the flow rate of an AC permanent  
23 magnet synchronous motor pump in proportion to a signal from a microphone or  
24 an external audio input, wherein said circuitry further comprises an amplifier with  
25 a first potentiometer for varying said amplifier's gain and a detector circuit for  
26 providing a varying DC level to an analog to digital converter for input into said  
27 micro-controller; and

28

1                   b. a second potentiometer coupled to said analog to digital converter for  
2 adjustment of operational parameters dependent on the switch position of said  
3 mode switch.

4

5                   Claim 8 (currently amended): The apparatus of Claim 1, further comprising a line  
6 receiver/transmitter for interfacing an external DMX (digital multiplex) control  
7 signal to said micro-controller.

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9                   Claim 9 (cancelled)

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11                  Claim 10 (previously presented): The apparatus of Claim 1, further comprising a  
12 software program embedded in said micro-controller for controlling the behavior  
13 of said motor pump with said software program comprising means deriving in a  
14 related manner the pulse width and frequency of control signals to be applied to  
15 said output switching circuit and further comprising means generating said  
16 control signals in such a manner as to produce said AC pulse switching signals  
17 at the output of said switching circuit as required to synchronously drive said  
18 motor pump at the frequency of said AC pulse switching signals and with said AC  
19 pulse switching signals having a pulse width as required to maintain  
20 synchronization of said motor pump with said AC pulse switching signals over all  
21 realizable speeds.

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23                  Claim 11 (original): A controller for varying the flow rate of an AC permanent-  
24 magnet synchronous motor pump comprising:

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26                  a. a mode switch for selecting the mode of operation of the controller from  
27 a group comprised of a programmed flow control variation mode, an audio  
28 input mode, a manual mode and an external data input/output mode;

1  
2        b. a programmable micro-controller for calculating the pulse width and  
3        frequency timing for generating pulse switching signals to control said  
4        pump; and

5  
6        c. an output switching circuit for generating a pulsed waveform for driving  
7        said pump according to said pulse switching signals.

8  
9        12 (previously presented): The apparatus of Claim 3 further comprising a  
10      fountain directly coupled to said AC permanent magnet synchronous motor pump  
11      for generating variable water patterns comprising:

12  
13        a. at least one fountain element comprised of a water inlet and one or  
14        more water outlets for the flow of water.

15  
16        Claim 13 (currently amended): The ~~apparatus audio circuitry and analog to digital~~  
17        converter of Claim 7, further comprising rectifier circuitry for converting  
18        alternating current to direct current for driving said audio circuitry and said analog  
19        to digital converter.

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21        Claims 14-15 (canceled)